i.C³™

User Guide

For Helmer i.Series™ Products

360129-1/C

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About this User Guide

The i.C³™ User Guide provides information about use of the i.C³. Refer to product operation or service manual for general information. Refer to the service manual for additional information about the equipment on which the i.C³ is installed.

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Chapter 1: Overview

⚠ ***Warning: To avoid injury—before using this product, read all instructions in the associated operation manual.***

Features

The i.C³™ consists of an intuitive user interface and icon-driven touchscreen. The touchscreen is contained within the instrument bezel, as are additional features.

Touchscreen

The interface to the i.C³ system.

USB Port

Connect a flash memory device to download temperature data or upload firmware updates.

Audio Speaker

Provides an audible signal when alarm conditions are met. Also provides audible signal when screen icons and buttons are touched.

Using the Touchscreen

The touchscreen and touch techniques make the i.C³ easy to use. Icons, status indicators, and navigation buttons let the user see and respond to i.C³ system conditions and events.

Note: Anything that touches the screen is understood as a command—do not let anything touch unintentionally.

Touch Techniques

Touch-select	Touch once to select an item.
Touch-drag	To move an item, touch-hold to select the item and drag it to a new location. Use a deliberate touch-drag motion (without lifting).
Touch-scroll	To scroll, slide finger slowly across the screen (horizontal or vertical). Stop before lifting. For more control while scrolling, keep your finger in contact with the screen.

Icons, Indicators, and Buttons

➤ For a complete list of all icons and indicators, see the "i.C³ Icon Reference Guide" at the end of this user manual.

Application icons serve as navigation buttons to the associated application screen.

Status indicators alert the user to a change of status.

Navigation buttons return the display the previous screen or the Home screen.

Chapter 2: Language Screen

Language Configuration

The Language screen is displayed when the i.C³ is powered on. Use the Language screen to select the i.C³ display language.

Touch the **Language** button. *The Language drop-down list is displayed.*

Touch the language to be displayed. *The selected language is displayed in the Language button.*

➤ See “Chapter 10: i.C³ Settings, i.C³ Settings Options” for details on changing the i.C³ language after power-on.

Touch the **Home** button to continue to the Home screen.

Note: English is the default language.

Note: When the i.C³ is powered on for the first time, the touchscreen calibration screen is displayed. Refer to the product service manual for instructions in calibrating the touchscreen.

Settings Configuration

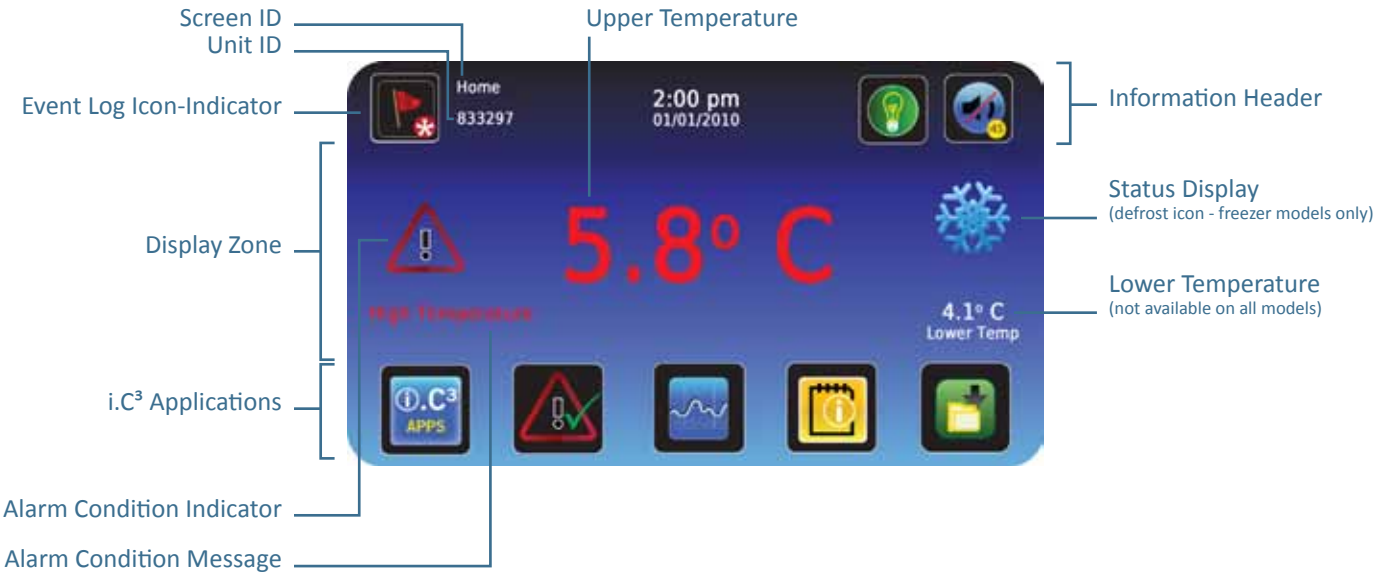
Basic configuration parameters should be set before using the i.C³.

➤ See “Chapter 10: i.C³ Settings” for details on configuring i.C³ settings.

Chapter 3: Home Screen Basics

Note: To temporarily silence active alarms, touch the **Mute** button in the top right corner of the screen.

Looking at the Home Screen



Home Screen Layout

The i.C³ Home screen is comprised of three (3) information areas. The **information header** is the dark blue horizontal band across the top of the Home screen. This header is displayed on all i.C³ screens. From left to right it includes: the Event Log icon, Screen ID, Unit ID, Date/Time, Battery indicator, Light On/Off button (if applicable), and Mute button.

The **display zone** occupies the middle band of the screen and includes information indicators and messages. From left to right, they are: Alarm Conditions indicator and Alarm Conditions message; Upper Temperature display; Lower Temperature display (if installed); and Status Display area.

Application icons are at the bottom of the screen and include five (5) factory-preset application icons. From left to right, they are: i.C³ Applications (APPS), Automatic Alarm Test, Temperature Graph, Information Logs, and Download.

Note: After two (2) minutes of no interaction, the Temperature Graph screensaver is displayed (if enabled).

Note: Additional applications are available on the i.C³ APPS screen.

Home Screen Buttons and Indicators

Touch the **Event Log** icon to navigate to the Event Log screen for review of alarm event and door open data.

Look for the **New Event** indicator (red asterisk) on the lower right of the Event Log icon.

Touch the **Mute** button to temporarily silence alarm sound; touch repeatedly to increase the Mute timer incrementally.

Toggle the **Light** button to turn the light On or Off (standard on upright refrigerators, optional on undercounter refrigerators).

Chapter 4: i.C³ Applications (APPS)

All i.C³ Applications can be reached from the i.C³ APPS screen.

Note: i.C³ Applications screen icons are interchangeable with those found on the Home screen.

➤ See “Chapter 13: Icon Transfer” for details on transferring icons.

Note: Upper Temperature and Alarm Conditions are displayed on the left side of the screen.

Using i.C³ Applications

Navigate to an application screen: Touch the associated application icon.

Alarm Test

Initiate automatic alarm tests for the high and low temperature alarms.

Information Logs

Access all available data log applications.

Contact Helmer, Inc.

View contact information for Helmer, Inc. and firmware revision numbers.

Display Settings

Adjust monitor screen brightness.

Temperature Graph

View current and historical probe temperature data and alarm events.

Downloads

Download information log(s).

Uploads

Upload firmware updates.

i.C³ Settings

All i.C³ system settings are configured and other preferences selected from the i.C³ Settings screen.

Note: The i.C³ Settings screen is password protected, unless password protection is turned Off (from the i.C³ Settings screen). If accessing the i.C³ for the first time, use the factory-originated password (1234).

Icon Transfer

Reposition application icons on the Home and Applications screens.

Access Control (Optional)

Display keypad for refrigerator access.

Chapter 5: Temperature Alarm Test

Initiate an automatic alarm test for the high and low temperature alarms. The unit uses a built-in Peltier device to heat or cool the probe without affecting chamber temperature. The process takes less than five (5) minutes.

Note: Touch the **Cancel Test** button at any time to abort the alarm test.

Begin a Test

Touch the **High Alarm Test** or **Low Alarm Test** button to begin the alarm test. *The button for the selected test begins to flash.*

During a Test

- Temperature changes are displayed in the Temperature Display on the left side of the screen.
- As the temperature moves into alarm conditions, the temperature reading turns red.
- The message *"Peltier Test Probe Cooling (or Warming)"* is displayed in the Alarm Condition area.
- When completed, the message *"Test Complete"* is displayed on the right side of the screen.

Note: If the temperature alarm test takes longer than ten (10) minutes, the i.C³ will automatically cancel the test.

After a Test

- Event data for the alarm test is recorded and highlighted in blue in the Event Log.
- At the time of the alarm test, the Alarm Test icon is displayed on the Temperature Graph to show that the change in temperature was test-induced.

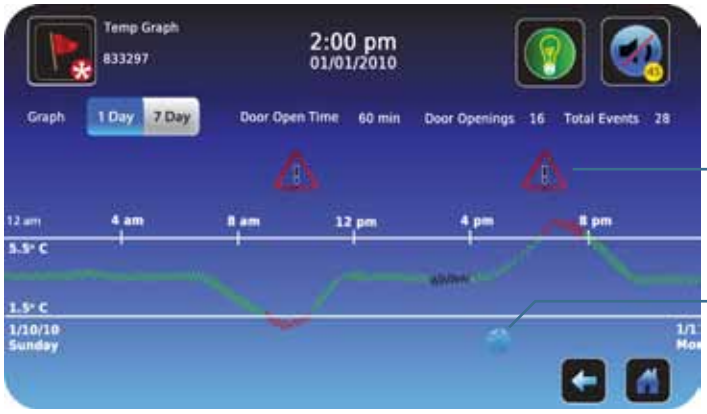
Cancel a Test

Touch the Cancel Test button to end the alarm test. *"Test Stopped"* is displayed on the right side of the screen.

Chapter 6: Temperature Graph

The Temperature Graph screen shows current and historical upper probe temperature data and temperature events.

Note: Up to 42 days of temperature data can be viewed on the graph.



Viewing the Temperature Graph

Select the 1-day or 7-day time span: Toggle the graph **Time Span** button or touch the graph.

Note: To view all graph features (including Alarm Condition, Alarm Test, and Defrost Cycle indicators), select the **1-Day** time span.

Date, day, and time information for the selected time span is displayed on the graph line.

- Upper line represents high alarm limit
- Lower line represents low alarm limit
- Temperature graph line turns green when unit is within alarm limits and red when outside alarm limits
- Temperature graph line turns black when there is an overlap in temperature data, such as when returning to standard time from daylight savings time

Note: If the time or date are changed, the stored temperature data will not be reformatted with the new time configuration. Logged events may be duplicated in the downloaded event database if the time or date are changed.

Note: The temperature graph displays 42 days of data. If the date is changed to a date greater than 42 days prior to the previous date setting, the temperature graph will not update until the internal clock reaches the date which is 42 days prior to the previous date setting.

Note: If the high alarm limit or low alarm limit are changed, a dashed vertical black line will appear on the temperature graph, corresponding to date and time when the change was made.

Event Data

Door Open Time: Total time (in minutes) that the unit door was left open during the selected time span.

Door Openings: Total number of times the unit door was opened during the selected time span.

Total Events: Total number of logged events that occurred during the selected time span.

Viewable with the 1-Day Time Span

Graph Display of Alarm Condition

Alarm condition events are shown on the graph by a small Alarm Condition icon when an alarm has been activated.

View detailed event data: Touch the **Alarm Condition** icon to navigate to the Event Log screen. Touch the **Event** to view detailed event data.

Graph Display of Alarm Test

Alarm tests are shown on the graph by a small Alarm Test icon.

View alarm test data: Touch the **Alarm Test** icon to navigate to the Event Log screen. Touch the **Event** to view detailed event data.

Graph Display of Defrost Cycle (Freezers)

The start of a defrost cycle is shown on the graph by a small Defrost Cycle icon, displayed below the graph.

View defrost cycle data: Touch the **Defrost Cycle** icon to navigate to the **Defrost Log** screen. Touch the **Event** to view detailed event data.

Date

The date and day are displayed below the 12:00 am data point on the temperature graph.

Chapter 7: Information Logs

All available data logs are accessed from the Information Logs screen.

Note: Some icons shown may be specific to models or optional features.

Event Log

The Event Log shows information from alarm events. A maximum of 100 (most recent) events can be viewed on the Event Log screen. A maximum of two (2) months of event data is stored for download. A maximum of 7,000 events are stored for download.

⚠ ***Caution: If more than two (2) months elapse between downloads or if the maximum of 7,000 events are recorded, the first data records that were saved will be deleted as new data records are added.***

➤ See “Chapter 8: Data Transfer, Downloading Event Data” for details on downloading event data.

Viewing the Event Log

To scroll through the log: Touch and hold the bidirectional **Arrows**.

To navigate to the Event Detail screen: Touch the **Event**.

Event Log Formatting

- Bold text: Not yet viewed
- Normal text: Viewed
- Dimmed text: Downloaded
- Data row shaded blue: High or low alarm (triggered from an alarm test)

Table Elements

- Event: Type of event that occurred
- Start Date: Date event occurred
- Start Time: Time event condition began
- Start Temp: Temperature at start of alarm event
- End Time: Time event condition ended
- End Temp: Temperature at end of alarm event
- Action: Indicator of corrective action recorded

Note: Data rows in the Event table can be sorted in ascending or descending order by touching column headings.

Event Messages

Event messages are displayed in the Display Zone of the Home screen.

- Compressor probe failure *"Compressor Probe Failure"*
- Upper probe failure *"Upper Probe Failure"*
- Lower probe failure *"Lower Probe Failure"*
- Evaporator defrost probe failure *"Evap Defrost Probe Failure"* (freezer models only)
- Control sensor failure *"Control Sensor Failure"*
- High temperature *"Hi Temp"*
- Low temperature *"Lo Temp"*
- Door open *"Door"*
- Power failure *"Power"*
- Date or time change *"Date/Time"*
- High alarm test *"High Alarm Test"*
- Low alarm test *"Low Alarm Test"*
- Defrost cycle *"Defrost"* (freezer and low-humidity refrigerator models only)
- Compressor temperature alarm *"Compressor Temperature"*
- Battery disconnected alarm *"No Battery"*
- Low battery voltage alarm *"Low Battery"*
- Communication Failure *"Communication Failure 1", "Communication Failure 2", "Communication Failure 3"*
- Power-up event *"Power-Up"*

Event Detail Screen

The Event Log Detail shows upper and lower probe, and compressor temperature information from alarm events. The cause of an alarm event and the corrective action taken can be acknowledged.

Viewing the Event Detail Log

- Type of alarm
- Start date/time of alarm
- End date/time of alarm
- Upper probe start/end, maximum/minimum temperatures
- Lower probe start/end, maximum/minimum temperatures
- Compressor start/end, maximum/minimum temperatures

Acknowledging Events

Use the Event Acknowledgement buttons to select the cause of an alarm event and the corrective action taken.

Touch the **Event Cause** button. *The Event Cause drop-down list is displayed.*

Touch the cause of the alarm event:

- Door Open
- Inventory
- Alarm Test
- Other

Note: If Other is touched, the alphanumeric keyboard is displayed. Enter the cause of the alarm condition (40 characters maximum).

➤ See “Chapter 15: Alphanumeric Keyboard” for details on using the keyboard.

Touch the **Action Taken** button. *The Action Taken drop-down list is displayed.*

Touch the action taken to correct the alarm event:

- Closed Door
- Removed Contents
- Completed Test
- Other

Note: If Other is touched, the alphanumeric keyboard is displayed. Enter the action taken to acknowledge the alarm (40 characters maximum).

➤ See "Chapter 15: Alphanumeric Keyboard" for details on using the keyboard.

Touch the **Signature** button. *The alphanumeric keyboard is displayed.*

➤ See "Chapter 15: Alphanumeric Keyboard" for details on using the keyboard.

Enter the user name or user initials..

Touch the **Save** button. *The message "Save?" is displayed.*

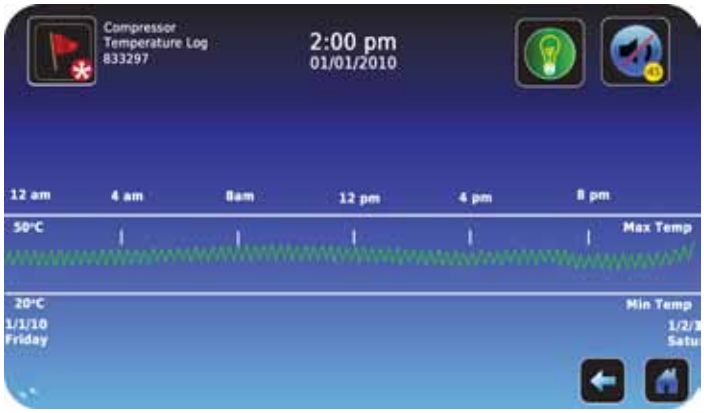
Touch . *A green check mark is displayed in the event row on the Event Log screen. The date and time of the event acknowledgement is automatically added to the Signature button. The event information is saved and can no longer be edited.*

Touch to cancel the save operation.

Note: All three (3) fields must be completed for data to be saved. If the Home or Back buttons are touched prior to touching the Save button, no information will be saved.

Compressor Temperature Log

The Compressor Temperature Log shows the compressor temperature over a rolling 24-hour time interval.



- Data is displayed in 4-hour segments
- The temperature line appears green when in-range and red when out-of-range

Note: If the compressor temperature setpoint is changed, a dashed vertical black line will appear on the temperature graph,

corresponding to date and time when the change was made.

Defrost Log (Freezers)

The Defrost Log screen contains a record of each defrost event.

Defrost Log Data Elements

- Date: Date defrost cycle began
- Start Time: Time defrost cycle began
- End Time: Time defrost cycle ended
- Maximum Upper Temperature (Max UT): Highest recorded upper probe temperature during cycle
- Maximum Lower Temperature (Max LT): Highest recorded lower probe temperature during cycle
- Maximum Compressor Temperature (Max CT): Highest recorded compressor temperature during the cycle
- Door Openings: Number of door openings that occurred during the defrost cycle

Access Control Log (Optional)

The Access Control Log screen contains a record of each user-authenticated access event. A maximum of 100 (most recent) events can be viewed on the Access Control Log screen. A maximum of two (2) months of event data is stored for download. A maximum of 21,000 events are stored for download.

⚠ ***Caution: If more than two (2) months elapse between downloads or if the maximum of 21,000 events are recorded, the first data records that were saved will be deleted as new data records are added.***

➤ See "Chapter 14: Optional Applications, Access Control" for details on using Access Control.

The Access Log shows information from controlled access chamber entries.

Note: The Access Log, with the Access Control screen and Access Control Setup screen, are activated when the Access Control option is activated (Access Control is a factory-activated option).

To scroll through the log: Touch and hold the bidirectional arrows.

Access Control Log Data Elements

- User: Name of user, Denied, or Override
- Date: Date of access
- Time: Time of access
- Duration: Length of time door remained open
- Method: How unit was accessed (PIN or key access)

Access Log Formatting

- Bold text: New data since the last time the log was viewed
- Normal text: Viewed
- Dimmed text: Downloaded
- Red text = Incorrect PIN entered, access denied, or key override was used

Chapter 8: Data Transfer

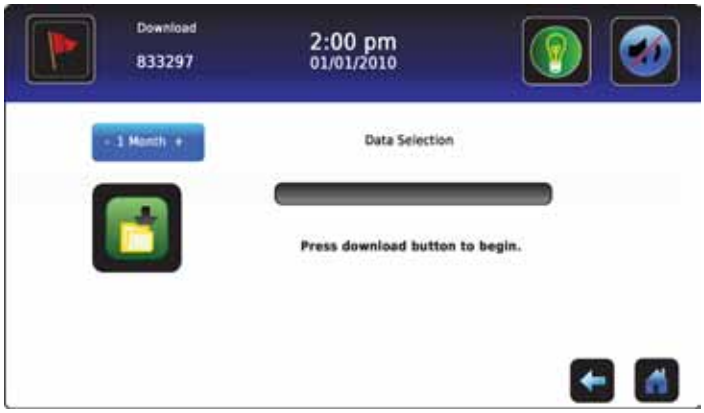
Downloading Temperature and Event Data

Use the Download screen to download information.

To perform a download:

1. Insert a memory device into the USB port located on the right of the i.C³ monitor bezel. When the memory device is detected, the message *"Insert USB Flash Drive"* clears. The Download icon is no longer shaded and the Data Selection spin box is displayed.
2. Touch the **Data Selection** spin box to download data from the currenet calandar month or current calendar month and previous calendar month.

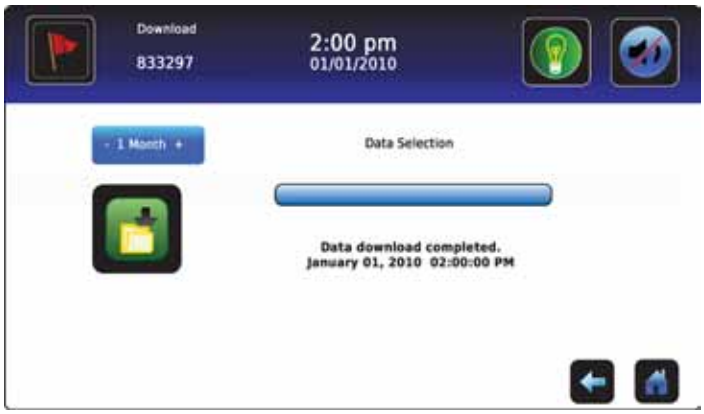
⚠ ***Caution: If more than two (2) months elapse between downloads, the first data records that were saved will be deleted as new data records are added.***



Note: If the Download icon is touched before a memory device is inserted, the message *"Insert USB Flash Drive"* is displayed until a memory device is inserted.

3. Touch the **Download** icon to begin data transfer. *The download progress bar is displayed.*

4. When finished, the message *"Data Download Completed"* and the date and time are displayed.



- Downloaded data is saved to the memory device in CSV (comma separated values) file format. Up to three (3) files are saved with each file download:
- Temperature log data (Data is sampled once per minute under normal conditions and every 15 seconds during an alarm event)
- Event log data
- Access log data (if Access Control is activated)

Note: The data is best viewed with an application used to create spreadsheets or databases. If Microsoft® Excel™ is used to view data, version 2009 or newer is required.

5. Remove the memory device from the USB port. The CSV file may be viewed, saved, and manipulated on a PC.

Note: If the memory device is removed before the data download is complete, the message *"Data download failed"* is displayed and the download is not completed. If the data download is not completed because the memory device is full, the message *"Please check flash drive"* is displayed and the download is not completed.

Note: After the files are transferred, the read/write properties of the downloaded files should be set to *read-only* by the user.

Note: The Download screen can not be closed during a data download unless an error occurs.

Note: A download should be completed in less than five (5) minutes. If the download has not completed in ten (10) minutes, contact Helmer Technical Service.

Uploading Firmware Updates

Note: Record the display processor and control processor firmware version number before uploading a firmware update. These numbers will be referenced after the update to ensure the update was successful.

➤ See “Chapter 4: i.C³ Applications (APPS), Using i.C³ Applications” for details on referencing the firmware revision number.

Note: Record the Control Sensor Offset temperature and the Evaporator Defrost Offset temperature values. These values will be referenced if the firmware update causes a change to the offset values.

➤ See “Chapter 12: Temperature Calibration and Control, Temperature Calibration” for details on calibrating the offset values.

If the Upload icon is touched before a memory device is inserted, the message *“Insert USB Flash Drive”* is displayed until a memory device is inserted.

Use the Upload screen to upload firmware updates.

To perform an upload:

1. Insert a memory device into the USB port located on the right of the i.C³ monitor bezel. When the memory device is detected, the message *“Insert USB Flash Drive”* clears and the Upload button is no longer shaded.

Note: If the Upload icon is touched before a memory device is inserted, the message *"Insert USB Flash Drive"* is displayed until a memory device is inserted.

Note: The Upload screen can not be closed during a data upload unless an error occurs.

2. Touch the **Upload** icon to begin data transfer. *The upload progress bar is displayed.*

3. When finished, the *"Data Upload Completed"* message and the date and time are displayed.

The i.C³ screen fades to white and the system automatically powers down and restarts.

4. Remove the memory device from the USB port. *Updated firmware is loaded to the i.C³ memory.*
5. After the i.C³ system restarts, verify the display processor (DP) and/or control processor (CP) firmware version number have been updated. *If either firmware version number has been updated from the recorded version number, contact Helmer Technical Service.*

➤ See "Chapter 4: i.C³ Applications (APPS), Using i.C³ Applications" for details on referencing the firmware revision number.

6. Verify the Control Sensor Offset temperature and the Evaporator Defrost Offset temperature values have not changed. *If either temperature offset value has been changed from the recorded value, calibrate the offset values.*

➤ See "Chapter 12: Temperature Calibration and Control, Temperature Calibration" for details on calibrating the offset values.

Chapter 9: Customizing the i.C³ Screen

Display Settings (Brightness)

>

The backlight on the i.C³ monitor has three (3) display settings.

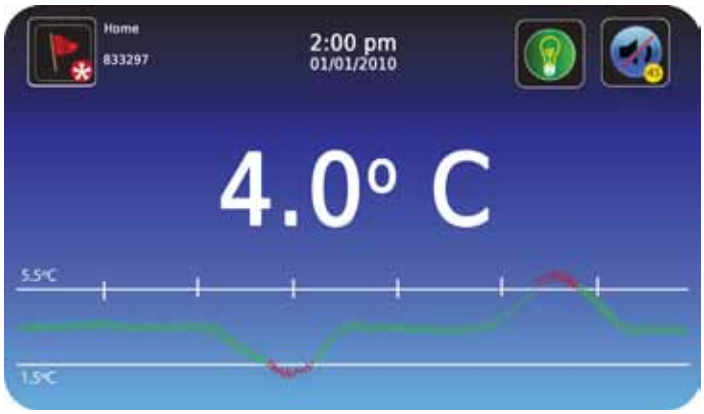
Select a different brightness setting: Touch any button.

Home Page Screensaver

>

The Home screen is equipped with a screensaver that displays a 24-hour temperature graph. The screensaver is automatically displayed after two (2) minutes of inactivity on the Home screen.

Note: Inactivity of two (2) minutes duration on any i.C³ screen results in automatic return to the Home screen.



Return to the Home screen: Touch anywhere on the screensaver.

Note: On the Settings screen, the screensaver can be disabled so the Home screen is viewable at all times.

Chapter 10: i.C³ Settings

>

The i.C³ Settings screen is where all i.C³ system settings are configured and other preferences selected.

Note: The i.C³ system requires up to 30 seconds to save configuration changes. Do not turn the power off until 30 seconds have elapsed.

Password Protection of the i.C³ Settings Screen

A password protects i.C³ settings from unauthorized changes. The i.C³ Settings screen is password protected, unless password protection is turned Off (using the Password Protection button on this screen).

- *Initial factory setting = On*

Note: Helmer recommends that password protection remain On.

Access the Settings screen:

1. **If password protection is turned On:** Touch the **i.C³ Settings** icon to bring up a numeric keypad. Enter the current password. If accessing the i.C³ for the first time, use the factory-originated password (1234).
2. **If password protection is turned Off:** Touch the **i.C³ Settings** icon to navigate directly to the i.C³ Settings screen.

Settings Options

Change Password

Change the password: Touch the **Change Password** button. Enter a new 4-digit password. Touch .

Sounds

Enable/disable all sounds *excluding alarms*: Toggle the **Sounds** button.

- *Initial factory setting = On*

Alarm Volume

Set the alarm volume: Touch the **Alarm Volume** spin box to set volume *(value = 1 to 9)*.

- *Initial factory setting = 9*

Alarm Tone

Set the alarm tone: Touch the **Alarm Tone** spin box to select the tone *(value = 1 to 4)*.

Sample alarm tones: Touch the **Try It** button to sample alarm tones.

Temperature Calibration

Navigate to Temperature Calibration screen: Touch the **Temperature Calibration** button.

➤ See “Chapter 12: Temperature Calibration and Control, Temperature Calibration” for details on calibrating the temperature.

Unit ID

The Unit ID is a unique identifier for the equipment.

- *Initial factory setting = serial number (displayed in button until changed by user)*

Set or change the unit ID: Touch the **Unit ID** button. *The alphanumeric keyboard is displayed.*

Type a maximum of 10 alphanumeric characters on the keyboard. *As characters are entered, they appear at the top of the screen.*

➤ See “Chapter 15: Alphanumeric Keyboard” for details on using the keyboard.

Touch to save entry and return to Settings screen. *The new Unit ID is displayed in the button and on all screens.*

Date/Time

Navigate to the Date/Time screen: Touch the **Date/Time** button.

➤ See “Chapter 10: i.C³ Settings, Date/Time Screen” for details on setting the date and time.

Language

Select the language: Touch the **Language** button and a drop-down list is displayed. Touch to select the language. *The selected language is displayed in the button.*

- *Initial factory setting = English*

Temperature Units

Select the temperature units: Toggle the **Temperature Unit** button to select Celsius (°C) or Fahrenheit (°F).

- *Initial factory setting = Celsius*

Note: If temperature units are changed, the i.C³ temperature setpoints and alarm settings should be recalibrated.

Note: When changing temperature units, the i.C³ temperature graph can take up to one minute to update.

➤ See “Chapter 11: Alarm Settings” for details on configuring alarm settings.

➤ See “Chapter 12: Temperature Calibration and Control, Temperature Calibration” for details on calibrating the temperature.

Password Protection

Turn password protection on or off: Toggle the **Password Protection** button.

- *Initial factory setting = On*

Note: Helmer recommends that password protection remain On.

Light-Off Delay Timer

Turn the light-off delay timer on or off: Toggle the **Light Off Delay** button.

- *Initial factory setting = On*

Set the duration of the light-off delay timer: Touch the **Light Off Delay** spin box until the correct time is displayed.

- *Adjustable from 0 to 10 minutes*
- *Initial factory setting = 5 minutes*

Note: Available on refrigerator models only.

Alarm Settings

Navigate to the Alarm Settings screen: Touch the **Alarm Settings** button.

➤ See "Chapter 11: Alarm Settings" for details on configuring alarm settings.

Temperature Setpoints

Navigate to the Temperature Controller Programs screen: Touch the **Temperature Setpoints** button.

➤ See "Chapter 12: Temperature Calibration and Control, Temperature Setpoints" for details on configuring temperature setpoints.

Restore Factory Settings

Restore all initial factory settings: Touch the **Restore Factory Settings** button. *The message "Restore factory settings?" is displayed.*

Touch to restore factory settings. Touch to cancel restoring factory settings.

⚠ ***Caution: After restoring factory settings, verify that the settings are acceptable for the desired operating conditions. Change settings as needed.***

Access Control as Home Screen (Optional)

Turn Access Control Home Screen on or off: Toggle the **Access Control as Home Screen** button.

- *Initial factory setting = On*

➤ See "Chapter 14: Optional Applications, Access Control" for details on using Access Control.

Note: If Off is selected, the standard Home screen is displayed and keypad access is obtained by touching the Access Control icon.

Home Page Temperature Graph Screensaver

Turn the screensaver on or off: Toggle the **Temp Graph Screensaver** button.

- *Initial factory setting = On*

Note: The Temperature Graph Screensaver button is disabled and shaded if Access Control as Home Screen is set to On.

Date/Time Screen

Access the Date/Time screen: Touch the **Settings** button, then touch the **Date/Time** button.

Set the Date

Set the date format: Toggle the **Date** button (select MM/DD/YY or DD/MM/YY).

Set the day: Touch the **Day** spin box until the correct day is displayed.

Set the month: Touch the **Month** spin box until the correct month is displayed.

Set the year: Touch the **Year** spin box until the correct year is displayed.

Set the Time

Set the time format: Toggle the **Time** button (select 12-hour or 24-hour).

Set the hour: Touch the **Hour** spin box until the correct hour is displayed (for 12-hour format, select AM or PM).

Set the minute: Touch the **Minute Set** spin box until the correct minute is displayed.

Set the AM/PM format: Toggle the **AM/PM** button to select AM or PM.

Note: The AM/PM button is active if 12-hour time format is selected.

Save Changes

Touch . *The message "Save?" is displayed.*

Touch . *The date/time change is saved.* Touch to cancel the date/time changes.

Note: An event (Date/Time Change) is entered in the Event Log when the date or time is changed.

Note: If the date or time is changed, a dashed vertical black line will appear on the temperature graph, corresponding to date and time when the change was made.

Chapter 11: Alarm Settings

> > Alarm Settings

Alarm Settings control the conditions and timing of New Event and Alarm Condition indicators that are displayed on the Home screen.

The New Event indicator is displayed in the information header on the Home screen. Alarm condition messages and temperature readings are displayed in the display zone of the Home screen.

Setting Alarm Parameters

Set the parameter for each alarm type using the adjacent spin box or toggle button.

Alarm Temperature Setpoint

The setpoint is the temperature at which the alarm (high or low) is activated.

To increase or decrease each parameter: Touch the plus (+) or minus (−) side of the spin box until the correct value is displayed.

Alarm Time-Delay Duration

Set the duration of the alarm condition before the alarm is activated.

To increase or decrease each parameter: Touch the plus (+) side or minus (−) side of the spin box until the correct value is displayed.

Alarm Types and Initial Factory Settings

High Temperature

Alarm display reads: *"High Temperature"*

Time delay:

- *Adjustable from 0 to 99 minutes*
- *Initial factory setting = 0 minutes*

Temperature Setpoint:

- *Temperature Setpoint adjustable from -100 °C to +50 °C*
- *Initial factory setting for refrigerators = 5.5 °C*
- *Initial factory setting for freezers = -20 °C*

Low Temperature

Alarm display reads: *"Low Temperature"*

Time delay:

- *Adjustable from 0 to 99 minutes*
- *Initial factory setting = 0 minutes*

Temperature Setpoint:

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting for blood bank refrigerators = 1.5 °C*
- *Initial factory setting for laboratory and pharmacy refrigerators = 2.0 °C*
- *Initial factory setting for freezers = -32 °C*

Low Battery

Alarm display reads: *"Low Battery"*

- *Setting is not adjustable*
- *Triggered after approximately 18 hours of battery use*

Power Failure

Alarm display reads: *"Power Failure"*

- *Adjustable from 0 to 99 minutes*
- *Initial factory setting = 1 minute*

Probe Failure

Alarm display reads: *"Probe Failure"*

- *Adjustable from 0 to 99 minutes*
- *Initial factory setting = 0 minutes*

Door Open (Time)

Alarm display reads: *"Door Open"*

- *Adjustable from 0 to 99 minutes*
- *Initial factory setting = 3 minutes*

Compressor Temperature

Alarm display reads: *"Compressor Temperature"*

Time delay:

- *Adjustable from 0 to 99 minutes*
- *Initial factory setting = 0 minutes*

Temperature Setpoint:

- *Adjustable from 0 °C to 115 °C*
- *Initial factory setting = 50 °C*

Communication Failure Messages

Alarm display reads: *"Communication Failure 1"*

- *Triggered if communication is lost between i.C³ display board and control board*
- *Unit will continue to run with previously saved settings*
- *Screen will not display temperature changes or alarm conditions*
- *i.C³ system will continue to reset until connection is re-established*

➤ Contact Helmer Technical Service. See "Chapter 16: Support and other Information, Contact Helmer" for Technical Service contact information.

Alarm display reads: *"Communication Failure 2"*

- *Triggered if communication is lost between i.C³ display board and internal system memory*
- *Unit will continue to run with previously saved settings*

➤ Contact Helmer Technical Service. See "Chapter 16: Support and other Information, Contact Helmer" for Technical Service contact information.

Alarm display reads: *"Communication Failure 3"*

- *Triggered if the database is corrupted*
- *The database is archived and a new database is automatically created*
- *Unit will continue to run with previously saved settings*

➤ Contact Helmer Technical Service. See "Chapter 16: Support and other Information, Contact Helmer" for Technical Service contact information.

Note: The "Communication Failure 3" alarm indicator appears on the Home screen and in the Event Log until the event has been acknowledged.

⚠ ***Caution: If more than two (2) months elapse between downloads, the first data records that were saved will be deleted as new data records are added.***

➤ See "Chapter 7: Information Logs, Event Detail Screen, Acknowledging Events" for details on using Event Acknowledgement.

Chapter 12: Temperature Calibration and Control

Temperature Calibration

> > Temperature Calibration

Calibration adjusts temperature setpoints so that the value displayed (upper or lower chamber probes) matches the actual chamber temperature, as measured by an independent thermometer.

The spin boxes are used to calibrate the temperature probe readings and the offset values.

To set control parameters: Touch plus (+) or minus (−) on the adjacent spin box until the correct value is displayed.

⚠ ***Caution: Temperature calibration values for the control sensor, evaporator defrost probe, and compressor probe, and offset values for the control sensor and evaporator defrost probe are set at the factory and should not be changed unless directed by Helmer Technical Service.***

Note: Upper and lower chamber temperature probes may require periodic calibration. Refer to the service manual for instructions in calibrating chamber temperature probes.

Control Sensor Temperature

Calibrated temperature for the temperature control sensor.

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting = varies*

Control Sensor Offset

Adjusts the displayed chamber temperature, relative to the control sensor temperature value.

- *Adjustable from -10 °C to +10 °C*
- *Initial factory setting = varies*

Evaporator Defrost Probe Temperature

Calibrated temperature for the evaporator defrost probe.

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting = varies*

Evaporator Defrost Probe Offset

Adjusts the displayed evaporator defrost temperature, relative to the evaporator defrost temperature value.

- *Adjustable from -10 °C to +10 °C*
- *Initial factory setting = varies*

Upper Chamber Probe Temperature

Calibrated temperature for the upper chamber temperature probe.

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting = varies*

Lower Chamber Probe Temperature

Calibrated temperature for the lower chamber temperature probe (if equipped).

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting = varies*

Compressor Probe Temperature

Calibrated temperature for the compressor temperature probe.

- *Adjustable from 0 °C to 125 °C*
- *Initial factory setting = varies*

Temperature Setpoints

> > Temperature Setpoints

Temperature Controller Programs (All Refrigerators)

For continuous monitoring, the probe temperature is displayed on the right side of the screen.

To set control parameters: Touch plus (+) or minus (−) on the adjacent spin box until the correct value is displayed.

Temperature Setpoint

The temperature setpoint is the temperature at which the storage unit operates.

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting = 4 °C*

Hysteresis Setpoint

Hysteresis is the allowable temperature fluctuation relative to the temperature setpoint.

⚠ ***Caution: The hysteresis setpoint is factory-preset and should not be changed unless directed by Helmer Technical Service.***

- *Adjustable from 0.1 °C to 20 °C*
- *Initial factory setting = 1.0 °C (iB105 and iLR105 refrigerator models)*
- *Initial factory setting = 1.5 °C (iB111 refrigerator models)*
- *Initial factory setting = 2.0 °C (iB225, iB245, iB256, and iB456 refrigerator models)*
- *Initial factory setting = 0.8 °C (iLR111 and iPR111 refrigerator models)*
- *Initial factory setting = 1.0 °C (iLR120, iLR125, iPR120, iPR125 refrigerator models)*
- *Initial factory setting = 1.5 °C (iLR245 and iLR256 refrigerator models)*
- *Initial factory setting = 1.5 °C (iPR225, iPR245, iPR256, and iPR456 refrigerator models)*
- *Initial factory setting = 2.0 °C (all freezer models)*

Delay On Startup

Delays compressor startup in the event of a power interruption.

- *Adjustable from 1 to 59 minutes*
- *Initial factory setting = 2 minutes*

Control Relay Probe Error Duty Cycle

Percentage of time the compressor will run during a temperature probe error.

- *Adjustable from 0 to 100%*
- *Initial factory setting = varies, depending on cabinet size*

➤ Refer to the product service manual for Control Relay Probe Error Duty Cycle settings.

Additional Temperature Controller Programs (Laboratory and Pharmacy Refrigerators)

Low-humidity refrigerators (laboratory and pharmacy models) feature additional Temperature Controller Programs settings.

To set control parameters: Touch plus (+) or minus (−) on the adjacent spin box until the correct value is displayed.

Defrost Events (1 – 4)

Toggle the **On/Off** button to schedule defrost events. Touch the corresponding **Time** spin boxes to set the time for each evaporator defrost event.

- *Up to four (4) defrost events can be scheduled per day.*

Defrost Operation Time

Set the maximum duration of a defrost event before automatic termination.

- *Adjustable from 1 to 120 minutes*
- *Initial factory setting = 15 minutes*

Manual Defrost

Manually start or stop a defrost cycle.

Control Relay Probe Error Duty Cycle

Percentage of time the compressor will run during a temperature probe error.

- *Adjustable from 0 to 100%*
- *Initial factory setting = 50%*

➤ Refer to the product service manual for Control Relay Probe Error Duty Cycle settings.

Temperature Controller Programs (Freezers)

For continuous monitoring, the temperature for upper and defrost probes are displayed on the right side of the screen.

To set control parameters: Touch plus (+) or minus (−) on the adjacent spin box until the correct value is displayed.

Temperature Setpoint

Temperature at which the storage unit operates.

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting = -30 °C*

Hysteresis Setpoint

Hysteresis is the allowable temperature fluctuation relative to the temperature setpoint.

⚠ ***Caution: The hysteresis setpoint is factory-preset and should not be changed unless directed by Helmer Technical Service.***

- *Adjustable from 0.1 °C to 20 °C*
- *Initial factory setting = 2 °C*

Delay On Startup

Delays the compressor startup at initial power-on or after a power interruption.

- *Adjustable from 1 to 59 minutes*
- *Initial factory setting = 2 minutes*

Fan Operating Mode

2 = Fan runs continuously, except during defrost and fan delay time after defrost

The fan stops if the temperature measured with the evaporator sensor exceeds the Fan Stop/Go Temperature.

Note: *To run the fan during defrost and the during time delay after defrost, set the Fan Stop/Go Temperature to its upper limit (see the Fan Stop/Go Temperature setting).*

Fan Stop/Go Temperature

Set the temperature at which the fan stops operating.

- *Adjustable from -100 °C to +50 °C*
- *Initial factory setting = +50 °C*

Fan Delay After Defrost

After defrost termination, the fan operation is delayed for the specified time period.

- *Adjustable from 0 to 30 minutes*
- *Initial factory setting = 7 minutes*

Defrost Termination Temperature

Defrost terminates when the evaporator-sensor temperature exceeds the selected termination temperature.

- *Adjustable from 0 °C to 30 °C*
- *Initial factory setting = 14 °C*

Defrost Events (1 – 4)

Toggle the **On/Off** button to schedule defrost events. Touch the corresponding **Time** spin boxes to set the time for each evaporator defrost event.

- *Up to four (4) defrost events can be scheduled per day.*

Defrost Safety Operation Time

Set the maximum duration of a defrost event before automatic termination.

- *Adjustable from 1 to 120 minutes*
- *Initial factory setting = 15 minutes*

Drain Time, Refrigeration Delay After Defrost

Set the time after completion of a defrost event before the compressor runs.

- *Adjustable from 0 to 59 minutes*
- *Initial factory setting = 2 minutes*

Manual Defrost

Manually start or stop a defrost cycle.

Control Relay Probe Error Duty Cycle

Percentage of time the compressor will run during a temperature probe error.

- *Adjustable from 0 to 100%*
- *Initial factory setting = 100%*

➤ Refer to the product service manual for Control Relay Probe Error Duty Cycle settings.

Chapter 13: Icon Transfer

>

From this screen, icons can be moved between the Home screen and i.C³ Applications screen, or repositioned on the i.C³ APPS screen.

To view additional icons: Touch-scroll to the right or left.

Reposition icons: Drag icons with a touch-drag motion of the finger. Drag the selected icon directly over the icon that is currently located in the targeted position.

Home Screen Icons

A maximum of five (5) icons can be displayed on the Home screen.

Note: The i.C³ APPS icon appears dimmed because it must remain in the first position (top left) on the Home screen and cannot be transferred.

Chapter 14: Optional Applications

Access Control

Integrated Electronic Access Control limits user access, providing secure storage. A valid personal identification number (PIN) must be entered to open the unit.

Access Control screen

Access Control as the home screen

➤ See “Chapter 7: Information Logs, Access Control Log (Optional)” for details on viewing the access log.

Viewing the Access Control Screen

>

Temperature and Alarm Conditions are displayed on the left side of the keypad. When the screen is first displayed, the Closed Padlock indicator is displayed. “Enter PIN” is displayed above the locked indicator.

Enter the PIN: Use the keypad. As each number is entered, an asterisk appears.

If an incorrect PIN is entered, the message “Access Denied” is displayed.

Access Control as the Home Screen

>

If the Access Control option is activated, the Access Control Home Screen can be substituted for the standard Home screen.

Turn the Access Control Home Screen on or off: Toggle the **Access Control as Home Screen** button on the i.C³ Settings screen.

- *Initial factory setting for the Access Control Home Screen option = On*

When Access Control Home Screen is turned off:

- The standard Home screen is displayed
- The keypad is accessed by touching the Access Control icon (located on the i.C³ APPS screen and/or the Home screen)

Note: It is recommended that the Access Control icon be moved to the Home screen if the Access Control Home Screen is disabled. Use the Icon Transfer application.

Initial Entry into Access Control Setup

> > > Access Setup

Enter the supervisor PIN to set up Access Control.

Note: In the event the owner of the supervisor PIN becomes unavailable, contact Helmer Technical Service to reset the supervisor PIN.

Entry Into Access Control Setup

1. Touch the **Access Control Log** button on the Settings screen. Touch the **Access Setup** button. *The numeric keypad is displayed.*
2. Enter the factory supervisor PIN then touch the **Enter** button. *The numeric keypad closes and the Access Control Setup screen is displayed.*

- *Initial factory supervisor PIN = 5625*

Note: The supervisor PIN does not allow access to the unit. At least one (1) user ID must be set up to gain access to the unit.

Note: The supervisor PIN should be changed to prevent unauthorized user ID setup. The supervisor PIN can not be deleted.

Access Control Setup

The Access Control Setup screen allows management of multiple user profiles. Up to 100 user profiles can be set up.

Table Elements

- User ID
- PIN

Note: The i.C³ includes one (1) supervisor profile. The supervisor profile does not allow access to the unit.

Add a User Profile

1. Touch the **Add User** button. *The alphanumeric keyboard is displayed.*

➤ See "Chapter 15: Alphanumeric Keyboard" for details on using the keyboard.

2. Enter the user ID for the new user profile.
3. Touch to store the user ID. *The alphanumeric keyboard is displayed.*
4. Enter the PIN (4 digits) for the new user profile.
5. Touch to store the PIN. *The User ID and PIN for the new user profile is displayed in the table.*

Delete a User Profile

1. Touch the **data row** of the user profile to be deleted. *The data row is highlighted in blue.*
2. Touch the **Delete User** button. *The message "Delete User?" is displayed.*
3. Touch to delete the user profile. *The user ID and PIN are deleted from the table.* Touch to cancel deletion of the user profile.

Edit a User Profile

1. Touch the **data row** of the user profile to be edited. *The data row is highlighted in blue.*
2. Touch the **Edit PIN** button. *The numeric keypad is displayed.*
3. Enter a new PIN (4 digits) for the user profile the touch . *The numeric keypad is closed and the new PIN is displayed in the table.* Touch to cancel editing the PIN. *The numeric keypad is closed without changing the PIN in the table.*

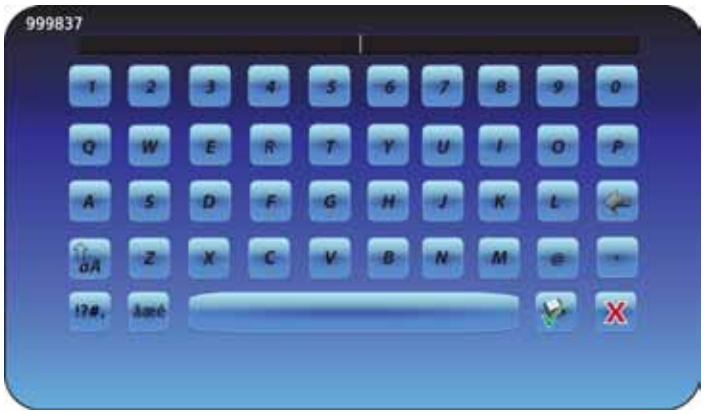
Note: Only the PIN can be edited when editing a user profile; an individual user ID can not be edited. To change a user ID, delete the user ID then create a new user ID and PIN.

Chapter 15: Alphanumeric Keyboard

The i.C³ features an alphanumeric keyboard for data input. The keyboard is automatically displayed when performing operations which require text input, such as creating user profiles for Access Control or acknowledging events. As buttons are touched on the keyboard, the corresponding character is displayed in the text window at the top of the screen.

The U.S./international keyboard is used to enter text in the following languages: English, Czech, Danish, Dutch, Finnish, French, German, Italian, Portuguese, Romanian, Spanish, Swedish, and Norwegian. Unique keyboards are used for Green and Russian languages.

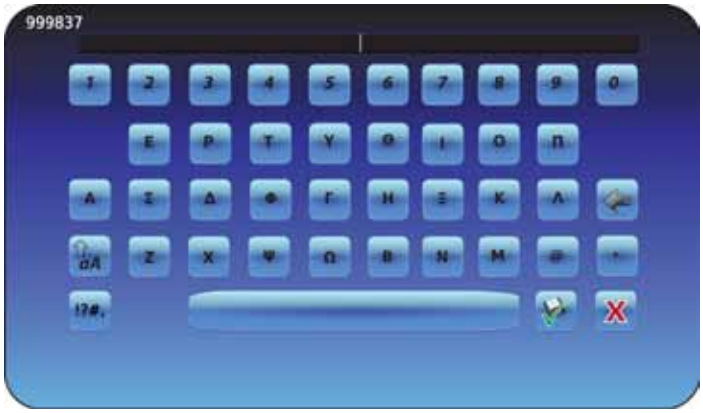
U.S./International Keyboard



The U.S./international keyboard consists of five (5) screens:

- Uppercase characters
- Lowercase characters
- Uppercase extended characters
- Lowercase extended characters
- Symbols

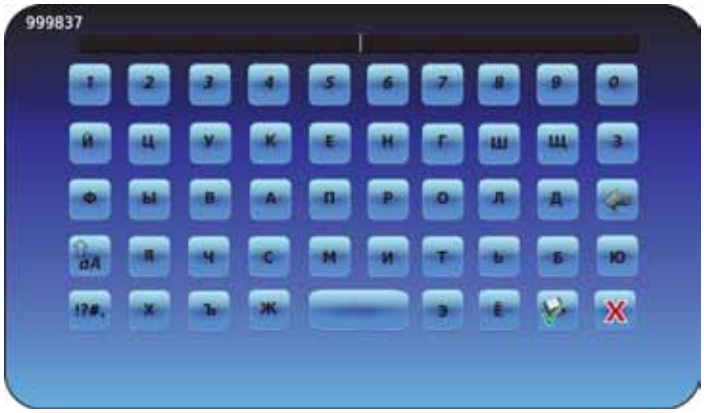
Greek Keyboard



The Greek keyboard consists of three (3) screens:

- Uppercase characters
- Lowercase characters
- Symbols

Russian Keyboard



The Russian keyboard consists of three (3) screens:

- Uppercase characters
- Lowercase characters
- Symbols

Common Buttons

Buttons for text entry, editing, save/cancel functions, and uppercase and lowercase keyboards are included for all languages. The extended character keyboard and symbol keyboard are included for U.S./international languages only.

Toggle the **Uppercase/Lowercase** button to navigate between the lowercase and uppercase character keyboard.
The lowercase character keyboard or uppercase character keyboard is displayed.

Touch the **Extended Character** button to navigate to the extended character keyboard.
The extended character keyboard is displayed.

Note: When the Extended Character button is touched, the uppercase extended character keyboard is displayed by default. To display the lowercase extended character keyboard, touch the Lowercase button.
Note: The uppercase and lowercase extended character keyboards are not available in Greek or Russian languages.

Touch the **Symbol** button to navigate to the symbol keyboard.
The symbol keyboard is displayed.

Note: The symbol keyboard is not available in Greek or Russian languages.

Touch the **Space** button to insert a space after a character.
A space character is inserted.

Touch the **Back** button to delete a character from the text window.
The previous character is deleted.

Note: Touch and hold the Back button to delete multiple characters.

Touch the **Save** button to save the text entry.
The text entry is saved and the keyboard is closed.

Touch the **Cancel** button to cancel the text entry.
The keyboard closes and the text entry is not saved.

Chapter 16: Support and Other Information

Contact Helmer

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Contact a distributor or intlsales@helmerinc.com

Restore Factory Settings

➤ See "Chapter 10: i.C³ Settings, i.C³ Settings Options" for details on restoring factory settings.

Calibrate the i.C³ Screen

If the display board or touchscreen is replaced, the screen must be calibrated.

➤ Refer to the product service manual for touchscreen calibration instructions.

Care of the i.C³ Screen

⚠ ***Caution: The i.C³ screen uses a sensitive touch technology.***

- To avoid damage to the touchscreen, do not apply pressure on the front of the monitor bezel or around the screen borders.
- To preserve optimal touch sensitivity, keep the screen clean of foreign objects. Avoid excessive dust accumulation on the screen.
- Do not expose the i.C³ screen to liquids or a harsh environment that contains excessive dust, heat, or humidity.
- Clean the i.C³ screen with a clean, dry cotton cloth.

Operation and Service Manuals

Refer to the CD shipped with the product. Manuals are also available at www.helmerinc.com/manuals.aspx

i.C³ Icon Reference Guide

Note: All i.C³ Application icons are included in this guide. Contact Helmer, Inc. for information about optional applications.

Image	Name	Function
	Home	• Navigate to the Home screen
	Event Log (icon-indicator)	• Navigate to the Event Log • Red asterisk indicates new event
	i.C³ Settings	• Navigate to the i.C³ Settings screen
	i.C³ Applications (APPS)	• Navigate to the i.C³ APPS screen
	Back Arrow	• Navigate to the previous screen
	Alarm Conditions (icon-indicator)	• Indicates alarm event occurred • Navigate to the Event Log
	Alarm Test	• Navigate to the Alarm Tests screen • Initiate an Alarm Test
	Download	• Navigate to the Download screen • On the Download screen, start a data transfer
	Upload	• Navigate to the Upload screen • On the Upload screen, start a data transfer
	Mute On/Off (button)	• Touch once to temporarily silence an active alarm • Touch repeatedly to increase the mute timer duration
	Light On/Off (button)	• Refrigerator models only • Toggle light On or Off
	Temperature Graph	• Navigate to the Temperature Graph screen
	Information Logs	• Navigate to the Information Logs

Image	Name	Function
	Compressor Log	• Navigate to the Compressor Log
	Icon Transfer	• Navigate to the Icon Transfer screen
	Display Brightness	• Navigate to the Display Settings screen
	Scroll Arrows	• Indicates additional information is available by scrolling
	Defrost Cycle (icon-indicator)	• Freezer models only • Home - Defrost cycle in progress • Temp Graph - Defrost cycle occurred
	Defrost Log	• Freezer models only • Navigate to the Defrost Log
	Access Control	• Optional feature • Navigate to the Access Control Login screen
	Access Control Log	• Optional feature • Navigate to the Access Control Log
	Contact Helmer	• Navigate to the Helmer Contact Information screen
	Battery Power (indicator)	• Indicates i.C³ is running on battery

i.C³ Settings Reference Guide

Note: All i.C³ settings are shown in this guide. Contact Helmer, Inc. for information about settings as they pertain to optional applications.

General Settings

>

Note: General settings apply to refrigerator and freezer models.

Setting	Description	Default Value
Change Password	Change password used to access i.C³ Settings	1234
Sounds	Turn sound on or off (does not include alarms)	On
Alarm Volume	Audible alarm volume	9
Alarm Tone	Audible alarm tone	1
Unit ID	Unique identification number for the i.C³ system	i.C³ serial number
Date Format	Date display format	MM/DD/YYYY
Day	Calendar day	Set at the factory
Month	Calendar month	Set at the factory
Year	Calendar year	Set at the factory
Time Format	Time display format	12-hour
Minute	Minute value	Set at the factory
Hour	Hour value	Set at the factory
AM/PM	AM or PM value	Set at the factory
Language	Language displayed on the i.C³ screen	English
Temperature Units	Temperature units (°C / °F)	°C
Password Protection	Protect i.C³ Settings from unauthorized changes	On
Temp Graph Screensaver	Display temperature graph on Home screen	On
Brightness	i.C³ display screen brightness	3 (brightest)
Light Off Delay (on/off)	Set whether the chamber light will remain on after the door has closed	On
Light Off Delay (refrigerator models only)	Duration the chamber light will remain on after the door has closed	5 minutes
Alarm Settings	Access alarm setpoint settings	Refer to Alarm Settings table
Temperature Calibration Settings	Set probe temperature values to match measured temperature values	Refer to service manual
Temperature Setpoints	Set unit operation temperature	Refer to service manual
Restore Factory Settings	Change all settings to factory default values	Refer to service manual
Access Control Touchpad	Prevent chamber access without entry of a valid PIN (optional feature)	On (if Access Control option is installed)
Access Control Prox Card Reader	Prevent chamber access without access card validation (optional feature)	On (if Access Control option is installed)
Access Control as Home Page	Display Access Control keypad on the Home screen	On (if Access Control option is installed)

Alarm Settings

> > Alarm Settings

Setting	Description	Default Value (refrigerators)	Default Value (freezers)
High Temp (setpoint)	High temperature at which alarm condition occurs	5.5 °C	-20 °C
High Temp (time delay)	Time after high temperature alarm condition occurs until alarm sounds	0 minutes	0 minutes
Low Temp (setpoint)	Low temperature at which alarm condition occurs	1.5 °C	-35 °C
Low Temp (time delay)	Time after low temperature alarm condition occurs until alarm sounds	0 minutes	0 minutes
Power Failure	Time after power failure occurs until alarm sounds	1 minute	1 minute
Probe Failure	Time after probe failure occurs until alarm sounds	0 minutes	0 minutes
Door Open Time	Time door remains open until alarm sounds	3 minutes	3 minutes
Compressor Temperature (setpoint)	High temperature at which alarm condition occurs	50 °C	50 °C
Compressor Temperature (time delay)	Time after high temperature alarm condition occurs until alarm sounds	0 minutes	0 minutes

Event Log Codes

In the downloaded CSV data file, each event name is identified by an event code number.

Event Code	Description
1	Compressor Probe Failure
2	Lower Probe Failure
3	Evaporator Defrost Probe Failure
4	Control Sensor Failure
5	Upper Probe Failure
6	High Temperature
7	Low Temperature
8	Door Open
9	Power Failure
10	Date / Time Change

Event Code	Description
11	High Alarm Test
12	Low Alarm Test
13	Defrost (Defrost events have an event code but do not appear in the Event Log)
14	Compressor Temperature
15	No Battery
16	Low Battery
17	Communication Failure 1
18	Communication Failure 2
19	Power-Up

Note: Communication Failure 3 is not included in the downloaded CSV data file.

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